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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/928,598
Filing Date: August 13, 2001
Appellant(s): BOLDUC ET AL.

George Gates (Reg. No. 33,500)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed Dec. 17, 2007 appealing from the Office action mailed March 9, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Chui et al., U.S. Patent No. 5,600,373

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Chui et al., U.S. Patent No. 5,600,373 (referred to hereafter as Chui).

As to claims 1, 11 and 21, Chui teaches apparatus, method for viewing image data, comprising:

(a) display means "26d" (see col. 29 lines 40-55 and fig. 4a);

(b) network connecting means for transferring frames of said image data over a network from a remotely connected frame source (see 13 lines 27-55), wherein: (i) said image data comprises a plurality of image frames and has a frame rate from which may be inferred a due time for display of each frame in a sequence of frames in said image data (see col. 1 lines 38-48, col. 18 lines 19-48 and col. 28 lines 22-37); (ii) said frame source returns a frame in response to a frame request issued over said network (see col. 29 lines 40-55, the frames are displayed according to a sequence); and

(c) processing means configured to play a clip by:

(i) displaying selected frames from said frame source, on said display means, at their due time by skipping frames in said frame sequence in response to an indication of the data transfer rate of said network so that a loss of the network bandwidth availability results in degradation in smoothness of the clip, not a modification of the rate at which recorded events in the clip unfold (see col. 29 lines 40-55, video is displayed in real time, some frames are skipped).

As to claims 8, 18 and 28, Chui teaches apparatus, method for viewing image data, comprising:

(a) display means (see col. 29 lines 40-55);

(b) network connecting means for transferring frames of said image data over a network from a remotely connected frame source (see 13 lines 27-55),

(c) processing means configured to play a clip by:

(i) selecting a next frame for preloading by skipping at least one frame in the clip's frame sequence in response to an indication of the data transfer rate of said network (see col. 29 lines 45-51),

(ii)preloading a frame from the frame source into a frame queue in said memory means (see col. 29 lines 45-51),

(iii) displaying a preloaded frame at its correct time based on the frame rate in order to maintain timing integrity of the clip (see col. 29 lines 40-55),

(iv) processing elapsed time since the clip started playing with a frame timing parameter (see col. 29 lines 40-55), and

(v) updating the number of frames to skip in response to said processing of elapsed real time (see col. 29 lines 40-55).

As to claims 2 and 22, Chui teaches apparatus according to claims 1 and 21, wherein said indication of the data transfer rate is provided by a comparison of the

relative position of an input and an output pointer in a queue of frames that have been selected for display (see col. 29 lines 57-67).

As to claims 3 and 23, Chui teaches apparatus according to claim 1, wherein said frame source includes means for storing pre-rendered image frames (see col. 29 lines 40-55).

As to claims 4 and 24, Chui teaches apparatus according to claim 1, wherein said frames are skipped in response to a prediction of a network data transfer rate (see col. 29 lines 57-67).

As to claims 5 and 25, Chui teaches apparatus according to claim 1, wherein frames are prefetched into a frame queue prior to their due time (see col. 29 lines 40-55).

As to claims 6 and 26, Chui teaches apparatus according to claim 1, wherein a frame skip rate is defined by a user (see col. 28 lines 37-60).

As to claims 7 and 27, Chui teaches apparatus according to claim 1, wherein a frame is selected for display by processing its due time with elapsed real time since playback started (see col. 27 lines 52-67).

As to claim 9, Chui teaches apparatus according to claim 8, wherein said frame timing parameter is the due time for a frame (see col. 29 lines 40-55).

As to claim 10, Chui teaches apparatus according to claim 8, wherein instructions for the processing means are executed as multiple threads (see col. 29 lines 40-55).

As to claim 12, Chui teaches a method according to claim 11, wherein said indication of the data transfer rate is provided by a comparison of the relative position of an input and an output pointer in a queue of frames that have been selected for display (see col. 29 lines 40-55).

As to claim 13, Chui teaches a method according to claim 11, wherein said frame source includes means for storing pre-rendered image frames (see col. 29 lines 40-55).

As to claim 14, Chui teaches a method according to claim 11, wherein said frames are skipped in response to a prediction of a network data transfer rate (see col. 29 lines 40-55).

As to claim 15, Chui teaches a method according to claim 11, wherein frames are prefetched into a frame queue prior to their due time (see col. 29 lines 40-55).

As to claim 16, Chui teaches a method according to claim 11, wherein a frame skip rate is defined by a user (see col. 29 lines 40-55).

As to claim 17, Chui teaches a method according to claim 11, wherein a frame is selected for display by processing its due time with elapsed real time since playback started (see col. 29 lines 40-55).

As to claim 19, Chui teaches a method according to claim 18, wherein said frame timing parameter is the due time for a frame (see col. 29 lines 40-55).

As to claim 20, Chui teaches a method according to claim 18, wherein instructions for the processing means are executed as multiple threads (see col. 29 lines 40-55).

As to claim 29, Chui teaches a data structure according to claim 28, wherein said frame timing parameter is the due time for a frame (see col. 27 lines 52-67).

As to claim 30, Chui teaches a data structure according to claim 28, wherein instructions for steps (a) to (e) will be executed as multiple threads (see col. 29 lines 40-55).

(10) Response to Argument

Examiner summarizes the various points raised by the appellant and addresses replies individually.

The appellant argues that Chui does not disclose "skipping frames on the basis of network bandwidth availability". (see brief page 10, argument A).

In reply to A, Chui teaches a system and method for requesting a video from a source over a network (see fig. 4a and col. 13 lines 15-26) and displaying the requested video in real time (see col. 13 lines 57-67). The network has a variable network bandwidth that may vary between 40 to 80 MHZ in which data can be transmitted (see col. 1 lines 38-48). The computer that requested the video also has a decompressor that can decompress the received data over the network at a rate less than 1/30 frames per second (see col. 2 lines 41-54, col. 15 lines 55-col. 16 lines 7 and col. 29 lines 40-45).

Essentially, Chui admits that the current technology is not fast enough to transmit and display video data in real-time. The two main limitations in the technology as explained by Chui is 1) network bandwidth limitation not being fast enough to transmit video data over a network and 2) the decompression rate is not fast enough to decompressing the received video data to be displayed. To overcome these limitations, Chui explicitly teaches skipping video packets that were not received fast enough or were not decompressed fast enough and displaying only the packets that were transmitted and decompressed in just enough time to be displayed in real time (see col. 29 lines 40-56). Therefore Chui does teach skipping frames based on a frame rate. The claim language does not specify that the frame rate is a "network bandwidth availability". The frame rate can be broadly interpreted by examiner to be frame decompression rate or even the network bandwidth. In both cases, as explained above, Chui compensates for the shortcoming of the network bandwidth and the frame decompression rate by skipping frames that may not be displayed in real time.

The appellant argues that Chui does not disclose "displaying selected frames from said frame source, on said display means, at their due time by skipping frames in said frame sequence in response to an indication of the data transfer rate of said network so that a loss of the network bandwidth availability results in degradation in smoothness of the clip, not a modification of the rate at which recorded events in the clip unfold" (see brief page 10, argument B).

In reply to B, as explained above, the system has a limitation by having a slow bandwidth which may vary between 40 to 80 MHz (see col. 1 lines 38-47). However regardless of the change in the availability of the network bandwidth, the system taught by Chui skips frames and only displays the frames that can be displayed in real time (see col. 29 lines 40-63) regardless of the available bandwidth. In other words, assuming the available bandwidth initially is at 80 Mhz; also assuming that the system at the initial rate has to drop 1 frame per 5 frames. If the bandwidth drops for example to 60 MHZ, then the rate at which the decompressor will drop. The system would then have to adjust by skipping more frames so that the system would only display the frames that may be displayed in real time. Therefore, Chui teaches "displaying selected frames from said frame source, on said display means, at their due time by skipping frames in said frame sequence in response to an indication of the data transfer rate of said network so that a loss of the network bandwidth availability results in degradation in smoothness of the clip, not a modification of the rate at which recorded events in the clip unfold" as claimed.

The claim language stating "so that a loss of the network bandwidth availability results in degradation in smoothness of the clip, not a modification of the rate at which recorded events in the clip unfold" is a language that recites an intended use and does not provide a structure to achieve the intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

The appellant argues that Chui does not disclose selecting a next frame for preloading by skipping at least one frame in the clip's frame sequence in response to an indication of the data transfer rate of said network, preloading a frame from the frame source into a frame queue in said memory means, displaying a preloaded frame at its correct time based on the frame rate in order to maintain timing integrity of the clip, processing elapsed time since the clip started playing with a frame timing parameter, and updating the number of frames to skip in response to said processing of elapsed real time (see brief page 11, argument C).

In reply to C, Chui teaches that the system is able to determine whether the decompressor is able to decompress the frame and display it in real time. If the decompressor is unable to do so, then the decompressor skips to the next frame in the sequence based in the frame decompression rate and the rate at which the frames are received (see col. 29 lines 45-51). Therefore Chui selects the next frame in the sequence and therefore meets the limitation "selecting a next frame for preloading by skipping at least one frame in the clip's frame sequence in response to an indication of the data transfer rate of said network". The deompressor examines the header of the frame and determines the sequence number of the frame and then displays the frame at its right time by determining the sequence number and the proper time for the frame to be displayed (see col. 29 lines 40-55). Therefore Chui teaches "displaying a preloaded frame at its correct time based on the frame rate in order to maintain timing integrity of the clip, processing elapsed time since the clip started playing with a frame timing parameter, and updating the number of frames to skip in response to said processing of elapsed" as claimed.

The appellant argues that Chui does not disclose said indication of the data transfer rate is provided by a comparison of the relative position of an input and an output pointer in a queue of frames that have been selected for display (see brief page 11, argument D).

In reply to D, Chui teaches the skipping of the frames may be based on a selection from the user through the user interface (see col. 28 lines 22-37). Therefore Chui teaches "a relative position of an input and an output pointer in a queue of frames".

The appellant argues that Chui does not disclose frames are skipped in response to a prediction of a network data transfer rate (see brief page 12, argument E).

In reply to E, as discussed in arguments A and B, the skipping of the frames is based on two predictions, 1) network bandwidth and 2) data decompression rate. Therefore Chui teaches "frames are skipped in response to a prediction of a network data transfer rate".

The appellant argues that Chui does not disclose the frames are pre-fetched in a frame queue prior to their due time (see brief page 13, argument F).

In reply to F, Chui teaches that the decompressor receives the frames are received and placed in a data flow interface. Then a determination is made whether the decompressor has the capability of decompressing the frames to be displayed in real time before the frames are actually decompressed (see col. 29 lines 45-56 and col. 30 lines 20-27). Since the frames are placed in an interface flow before being decompressed and displayed in real time, then Chui meets the scope of the limitation "the frames are pre-fetched in a frame queue prior to their due time".

The appellant argues that Chui does not disclose a frame is selected for display by processing its due time with elapsed time since playback started (see brief page 13, argument G).

In reply to G, Chui teaches the system may determine the time needed to process the frame and based on the processing time of the frame and the sequence number of the frame, a determination is made whether the frame should be selected for decompression and display (see col. 29 lines 57-63).

The appellant argues that Chui does not disclose that the instructions for the processing means are executed as multiple threads (see page 14, argument H).

In reply to H, Chui teaches the decompressor comprises a data flow interface that receives the incoming stream and separates the flow into three channels R, G and B. Each of the channels process streams in parallel (see col. 30 lines 20-62). Since the decompressor processes stream in three separate channels, Chui teaches "instructions for the processing means are executed as multiple threads".

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Hussein Elchanti

Jan. 29, 2008

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